

CLAIMS

- 1) A gluten polymer, characterized in that the gluten proteins are intermolecularly covalently linked through polythiol-containing molecules.
- 5 2) The gluten polymer as in claim 1, characterized in that the gluten polymer is prepared by mixing gluten together with polythiol-containing molecules.
- 3) The gluten polymer of claim 1 and 2, characterized in that the polymer has a strength higher than 30 MPa.
- 4) The use of the gluten polymer matrix of claim 1 to 3 in the automotive industry.
- 10 5) A process for preparing a gluten polymer comprising the step of mixing the gluten in a gluten-dispersing mixture with polythiol-containing molecules.
- 6) The process of claim 5, wherein said gluten-dispersing mixture is an aqueous environment.
- 7) The process of claim 5 and 6, comprising the step of isolating the gluten proteins by precipitation and subsequent centrifugation.
- 15 8) The process of claims 5 to 8, comprising the step of drying the mixture.
- 9) The process of claim 5 to 8, comprising the step of first leaving the dried mixture unhandled for a certain period and then compression-molding the mixture.
- 10) The process of claim 9, wherein said period is at least 7 days.
- 11) The process of claim 9, wherein said period is at least 30 days.
- 20 12) The process of claim 5 to 11, comprising mixing fibers.
- 13) A process for preparing a gluten based polymer comprising the steps of mixing gluten in a gluten-dispersing mixture together with polythiol-containing molecules, precipitating the reaction products out of the mixture, centrifuging the mixture, drying the precipitate, leaving the dried material unhandled for a certain time period and compression-molding
25 the precipitate or a selection or combination hereof.
- 14) A process for preparing a gluten based polymer comprising the steps of mixing the gluten in a gluten-dispersing mixture together with polythiol-containing molecules, drying the mixture, leaving the dried material unhandled for a certain time period and compression-molding the dried mixture or a selection or combination hereof.
- 30 15) The process of claims 13 and 14, wherein gluten are also mixed with fibers in the first step.
- 16) A composite material, characterized in that the composite material comprises fibers and a gluten polymer of claims 1 to 3.

- 17) A process for preparing a composite material of claim 16, characterized in that the process comprises the steps of pre-coating the fiber with the gluten polymer of claims 1 to 3 and than contacting the pre-coated fibers with a gluten-dispersing mixture.
- 18) The process of claim 17, comprising a final step of drying the resulting material, leaving
5 the material unhandled for a certain period and than compression-molding the material.
- 19) A process for preparing a gluten-fiber composite material, comprising the steps of mixing gluten and fiber in a gluten-dispersing mixture, drying the mixture, leave the dried mixture unhandled for at least 30 days and compression-mold the dried mixture.
- 20) A process for preparing a gluten-fiber composite material, comprising the steps of pre-
10 coating the fiber with the gluten polymer under dry circumstances and than contacting the pre-coated fibers with a gluten-dispersing mixture.
- 21) A process as in claim 20, wherein one, two or all of the following steps are performed:
- a) drying the gluten-coated fibers;
 - b) leaving the gluten coated fibers unhandled for a certain period;
 - 15 c) compression-molding the material.
- 22) The use of a composite material of claim 16 for the automotive industry.
- 23) A composite material prepared by the process of claim 19 to 21.
- 24) The use of a composite material of claim 23 for the automotive industry.
- 25) Gluten compression-molded after it is left unhandled for a certain period.